

motors driven by 120 V electrical supply. The electrical motors 59 and 61 may be supplied with power by a flexible electrical cable connected to a suitable source of power.

Joint compound which is pumped from unit container 11, via pumps 13 and 15, to flexible hose 57 is passed to the handle assembly. The handle assembly comprises a control section 65 (as shown in FIG. 3) and a delivery section 67 (as shown in FIG. 4).

The control section 65 comprises a handgrip 69 and a tape supply element 71. A fluid passageway 73 (as shown in dotted lines in FIG. 3) passes through the control section 65 from a socket 75, where flexible hose 57 is fluidically connected to the fluid passage 73, to a socket 77 wherein a plug 79 of the delivery section 67 may be received so as to fluidically connect with the delivery section 67. The handgrip 69 is fitted with switches (in the form of buttons 81-86) for operation of the various functions of the apparatus, as will be disclosed hereinafter. The handgrip 69 is also fitted with a socket 87 for electrical connection of the switches to the various electrical elements in the backpack unit. Additionally, the handgrip 69 is also fitted with an additional socket (not shown) for connection (via a cable connection) to the various electrical devices in the delivery section 67.

The tape supply element 71 is shaped substantially as a hollow rectangle (as best seen in FIG. 5) and comprises first and second cross members, 89 and 91, and first and second connecting members 93 and 95. A first disc 97 is rotatably mounted on connecting member 93. A second disc 99 is rotatably mounted on connecting member 95. The mounting of discs 97 and 99 is such that the discs are rotatably mounted substantially coaxially. Disc 97 is provided with a radially extending flange 101 and disc 99 is provided with a radially extending flange 103. At least one of the discs 97 and 99 is moveable axially with respect to the other disc by being supported for rotation on a pin 105 or 107, respectively, received within a corresponding bore 109 or 111 formed in cross member 93 or 95. A spring (not shown) may be fitted in bore 109 and/or 111 so as to yieldably urge at least one of discs 97 and 99 axially toward the other disc. The discs are of such a diameter as to be received within the core of a roll of wallboard tape, whereby a roll of wallboard tape may be supported on the discs for rotation so as to supply tape through the delivery section 67 of the handle.

The delivery section 67 substantially comprises a fluid conduit assembly 113 and a support plate 115. The fluid conduit assembly, as best seen in FIG. 7, comprises the plug 79 which is fluidically connected to a chamber 117 which in turn is connected to three fluid supply pipes 119, 121 and 123. Pipe 121 is fluidically connected to supply nozzle 125 and pipe 123 is fluidically connected to supply nozzle 127. Pipe 119 is fluidically connected via elbow 129, pipe 131 and valve 133 to tape supply nozzle 135, which when assembled is disposed in region 137 of the support plate 115.

A first stepping motor 139 is mounted on chamber 117 and connected via flexible drive cable 141 to a first bevel gear 143. First bevel gear 143 mates with a second bevel gear 145 which is mounted for rotation with a first shaft 147, shaft 147 having a screw thread formed on the outer periphery thereof. A slider 149 is slidably mounted on rails 151 and 153 with a knife edge (not shown) depending in the gap between rails 151 and 153. Connection member 155 is connected to slider 149 and

is fitted with a screw threaded bore corresponding to the screw thread formed on the outer periphery of the first shaft 147, whereby rotation of the first shaft will cause movement of the slider 149 along rails 151 and 153, thereby drawing the knife edge across plate 115. Reversal of the rotation of the first shaft 147 by reversal of the rotation of the first stepping motor 139 will draw the slider, and hence the knife edge, back across plate 115. By alternating the direction of rotation of first stepping motor 139, the knife edge may be drawn back and forth across plate 115 as needed.

A second stepping motor 157 is also mounted on chamber 117 and is connected via flexible drive cable 159 to gear box 161. Gear box 161, in turn, contains gears to drive second shaft 163 upon which friction rollers 165, 167 are mounted for rotation therewith. Plate 115 is fitted with guide rails 169 and 171 so as to guide wallboard tape beneath rollers 165 and 167, beneath rails 151 and 153 as well as shaft 147 and over tape supply nozzle 135.

In operation, a tape passing between guide rails 169 and 171 on plate 115 may be advanced a predetermined amount by actuation of stepping motor 157 so as to cause a predetermined rotation of shaft 163 and the friction rollers 165 and 167 mounted thereon. Likewise, the tape may be cut by actuation of the stepping motor 139 and the concomitant rotation of shaft 147 causing slider 149 (which is fitted with a knife edge) to slide across the width of the tape on plate 115. In this regard, for example, switch 81 on handgrip 69 can actuate stepping motor 157 so as to cause the tape to advance in a predetermined amount. Likewise, switch 84 can be connected to stepping motor 139 so as to cause movement of slider 149 across the tape. It should be noted, however, that switch 84 alternatively changes the polarity of electrical current fed to stepping motor 139 so as to alternately draw the slider across and then back across the plate 115. As the tape passes over tape supply nozzle 135 joint compound is applied to the lower face 173 of the tape 175.

Turning now to FIGS. 8 and 9, a second plate 177 is releasably attachable to the delivery section 67 of the handle. In this regard, as may best be seen in FIG. 9, supply nozzles 125 and 127 may be respectively received in passages 179 and 181 in a snap-fit or force-fit manner. Passage 179 communicates with an orifice 183 formed in plate 177. The orifice 183 is fitted with a gate 185 which is pivotally mounted on plate 177 so as to be moveable from a first position in which fluid passage through the orifice is prevented to a second position (as shown in FIG. 9) wherein fluid passage through orifice 183 is permitted. The gate may be biased, by a torsion spring 187, so as to be yieldably urged to the first position.

In a similar manner, passage 181 communicates with an orifice 189 formed in plate 177. Orifice 189 is also fitted with a gate 191 pivotally connected to plate 177 so as to be moveable from a first position in which fluid flow through the orifice is prevented and a second position in which fluid flow through the orifice is permitted. Gate 191 may also be biased, as by torsion spring 193, so as to yieldably urge the gate to the first position. Rollers 195, 197 and 199 may be supported on a shaft 201 which in turn is journaled in a support member 203 carried in bore 205 formed in the plate 177. A biasing spring 207 yieldably urges the rollers downwardly so as to force the lower side 173 of tape 175 into contact with wallboard 209. A first resilient wiper blade 211 adjustably